

Claim Listing

The following claim listing replaces all existing claims.

1. (canceled)
2. (canceled)
3. (canceled)
4. (canceled)
5. (canceled)
6. (canceled)
7. (canceled)
8. (canceled)
9. (canceled)
10. (canceled)
11. (Previously Presented) The method of claim 41 wherein the second electrode is the planar light-sensitive electrode, and wherein the illumination in combination with the interfacial electric field results in formation of an ordered array of particles in said designated area defined by the illumination pattern.
12. (Previously Presented) The method of claim 41 wherein the physical or chemical patterning of the second electrode, which is a planar electrode, distributes the electric field in a predetermined manner so as to define said at least one designated area where the ordered array of particles is formed.
13. (Previously Presented) The method of claim 41, wherein the second electrode comprises a silicon electrode.
14. (Previously Presented) The method of claim 41, wherein the second electrode comprises an ITO film.
15. (Previously Presented) The method of claim 14, wherein the ITO film is deposited on a flexible transparent substrate.
16. (Previously Presented) The method of claim 12, wherein the second electrode has been modified so as to affect its interfacial impedance or surface charge density.
17. (Previously Presented) The method of claim 12, wherein the second electrode also has an interior and the surface or the interior of the second electrode is modified by spatially modulated oxide growth, surface chemical patterning or surface profiling.

18. (Previously Presented) The method of claim 12, wherein the second electrode also has an interior and one or more areas of the surface or the interior of the second electrode are modified to exhibit low impedance, said areas of low impedance defining said at least one designated area where the ordered array of particles is formed.

19. (Previously Presented) The method of claim 12, wherein the second electrode is both physically or chemically patterned and light-sensitive and said at least one designated area where the ordered array of the particles is formed is defined in accordance with the predetermined light pattern and the physical or chemical patterning.

20. (Previously Presented) The method of claim 41, wherein the first electrode and the second electrodes are both planar electrodes substantially parallel to each other.

21. (Previously Presented) The method of claim 41, wherein the electric field is generated by applying an AC voltage between the first and the second electrodes, with or without application of a DC voltage.

22. (Previously Presented) The method of claim 41, wherein the particles, in forming the array, are transported in a direction substantially parallel to said interface.

23. (Previously Presented) The method of claim 41, wherein the liquid medium comprises an electrolyte solution.

24. (Previously Presented) The method of claim 41, wherein the particles are glass or polymeric beads.

25. (canceled)

26. (canceled)

27. (canceled).

28. (canceled)

29. (canceled)

30. (canceled).

31.(canceled)

32. (canceled)

33. (canceled).

34. (canceled)

35. (canceled)

36. (canceled)

37. (canceled)

38. (canceled)

39. (canceled)

40. (canceled)

41. (Previously Presented) A method of forming an array of particles, said method comprising the following steps:

providing a first and second electrodes, each having a surface, said surfaces being opposed and positioned to accommodate a liquid medium between said surfaces, said liquid medium having polarizable particles suspended therein; and

generating an electric field at an interface between the second electrode and the liquid medium, wherein the second electrode comprises either:

(a) a light-sensitive electrode capable of controlling the movement of the particles and/or the liquid medium in a direction substantially parallel to the electrode surface when an electric field is generated within said interface and the light-sensitive electrode is illuminated with a predetermined light pattern, resulting in formation of an ordered array of particles in at least one designated area of the surface of the second electrode, said designated area being defined by the illumination pattern; or

(b) the second electrode is physically or chemically patterned to distribute an electric field in a predetermined manner, when an electric field is generated within said interface, in order to control the movement of the particles and/or the liquid medium in a direction substantially parallel to the electrode surface, said patterning affecting the local distribution of the electric field at the interface, such that the generation of the electric field results in formation of an ordered array of particles in at least one designated area of the surface of the second electrode.

42. (Previously Presented) The method of claim 41 wherein the refractive index of the particles is different from the refractive index of the liquid medium.